

REMARKS

Claims 1-31 are pending in the case, 20-31 having been withdrawn. The Office Action rejected each of claims 1-19 as follows:

- claims 1-19 are rejected as indefinite under 35 U.S.C. §112, ¶2 for alleged antecedent basis;
- claims 1-5 and 7-17 as anticipated under 35 U.S.C. §102(e) over U.S. Patent Publication 2003/0223822 (“Oldervall”);
- claims 1-2 and 4-19 as obvious under 35 U.S.C. §103(a) over U.S. Letters Patent 6,519,395 (“Bevan”) in combination with U.S. Letters Patent 5,724,306 (“Barr”) and further in view of U.S. Letters Patent 4,491,939 (“Carpenter”);
- claims 2 and 3 as obvious under 35 U.S.C. §103(a) over Bevan, Barr, and Carpenter in combination with U.S. Letters Patent 6,430,105 (“Stephen”);
- claim 6 as obvious under 35 U.S.C. §103(a) over Oldervall and Bevan in combination; and
- claims 18-19 as obvious under 35 U.S.C. §103(a) over Oldervall and Carpenter in combination.

Applicants traverse each of the rejections.

I. RESPONSE TO SUBSTANTIVE MATTERS

A. CLAIMS 1-19 ARE DEFINITE

The Office rejected claims 1-19 are rejected as indefinite under 35 U.S.C. §112, ¶2 for alleged antecedent basis problem for the limitation “independently of any signal lead” in claims 1 and 19. Applicants have amended “signal lead” to “lead” so that, to the extent that any antecedent basis is required—which Applicants dispute—the recitation of the “first lead” provides the antecedent. Note that the amendment does not narrow the scope of the claim. Applicants respectfully request that the rejection be withdrawn.

B. CLAIMS 1-5 AND 7-17 ARE NOVEL OVER OLDERVALL

The Office rejected claims 1-5 and 7-17 as anticipated under 35 U.S.C. §102(e) over U.S. Patent Publication 2003/0223822 (“Oldervall”). An anticipating reference, by definition, must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. M.P.E.P. §2131; *In re Bond*, 15 U.S.P.Q.2d (BNA) 1566, 1567 (Fed. Cir. 1990).

Both of independent claims 1 and 18 recited “a stress member extending continuously through the sensor module”. Dependent claims 2-17 and 19 incorporate this limitation as a matter of law by virtue of their dependence. 35 U.S.C. §112, ¶4. Oldervall fails to disclose this limitation.

Oldervall does not show a stress member extending continuously through the sensor housing as is recited in the claims—Oldervall’s stress member is external to the housing. The strength member 202, first shown in Figure 2, is a part of the cable 104, best shown in Figure 1C. As is apparent in Figure 1C and best shown in Figure 3, the stress member 104 passes through only that part of the sensor module 102 that attaches the module 102 to the cable 104. This is not “continuously through the sensor housing”. In addition to these clear depictions, Oldervall also expressly states in ¶[0024] that the “stress member 202” is mechanically coupled to the “sensor housing 210” rather than “extending continuously through the sensor module”. Accordingly, Oldervall fails to anticipate any of claims 1-5 and 7-17.

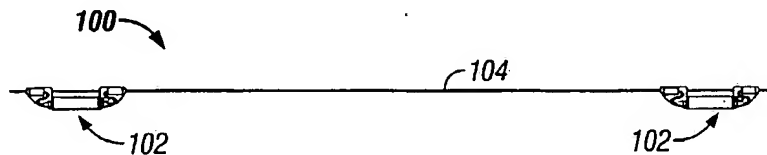


FIG. 1C

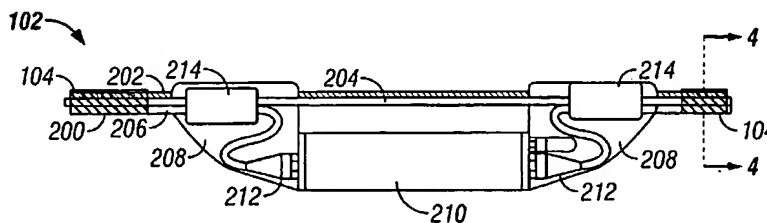


FIG. 2

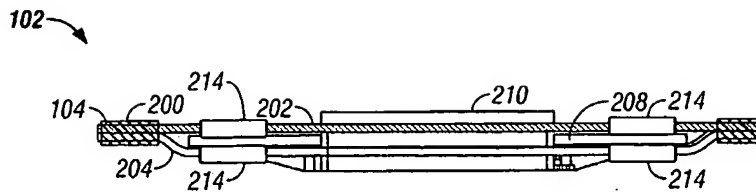


FIG. 3

B. CLAIMS 1-19 ARE UNOBVIOUS OVER VARYING COMBINATIONS OF BEVAN, BARR, CARPENTER & STEPHEN

There are two different sets of rejections predicated on two different combinations of four separate references including both Bevan and Carpenter:

- claims 1-2 and 4-19 as obvious under 35 U.S.C. §103(a) Bevan in combination with Barr and Carpenter; and
- claims 2 and 3 as obvious under 35 U.S.C. §103(a) over Bevan, Barr, and Carpenter in combination with Stephen.

Note that each of these rejections relies on the combination of Bevan and Carpenter. While the rejections are flawed in their construction of Bevan with respect to the language of the present claims, the primary flaw in these rejections is that Bevan and Carpenter cannot properly be combined.

Bevan expressly states in his background discussion that previous seismic cables in which stress members formed a framework defining the cable were prone to damage:

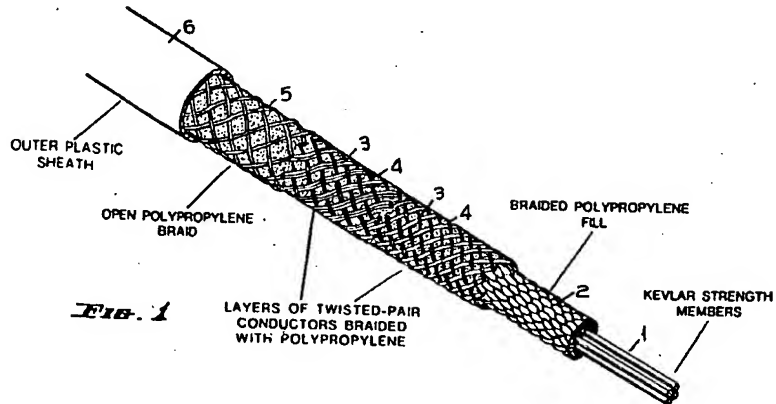
A towed array generally includes hydrophones and telemetry couplers spliced together and packaged loosely within a foam body, which is then placed within a strength member frame and booted within a hose. For bottom arrays, integration occurs by cutting into a pre-fabricated cable and, once integrated, the hydrophones and telemetry couplers are overmolded for protection.

Generally, for both approaches, the optical fiber used between hydrophones and telemetry components is either tight buffered, in a loose tube (loose buffered), or has the standard thin acrylate buffering. This makes them tend to be susceptible to damage, especially at either splice locations or at transition points from the outer jacketing to the bare fiber.

(col. 1, lines 15-27) But this is precisely the technique taught by Carpenter.

More particularly, Carpenter opens his detailed description of seismic cable comprising a strength member framework, best shown in Figure 1, reproduced below:

In the form shown in FIG. 1 a series of "KEVLAR" strength members 1 have wound over them a braided polypropylene fill 2, over which in turn are wound layers of twisted-pair conductors 3 braided with polypropylene strands 4 to form a cellular layer, over which is then formed an open polypropylene braid 5. (col. 2, line 57-63)



Carpenter then describes how the sensors are inserted:

The hydrophones 7 and preamplifiers 8 are inserted into the braided structure by opening up the braid as shown particularly in FIG. [3] and if the hydrophone assemblies are inserted into the cable after the braiding of the cable is completed, a boot 9 is placed over the area to replace the sheath 6 where cut to give access to the braiding. (col. 2, line 67-col. 3, line 5)

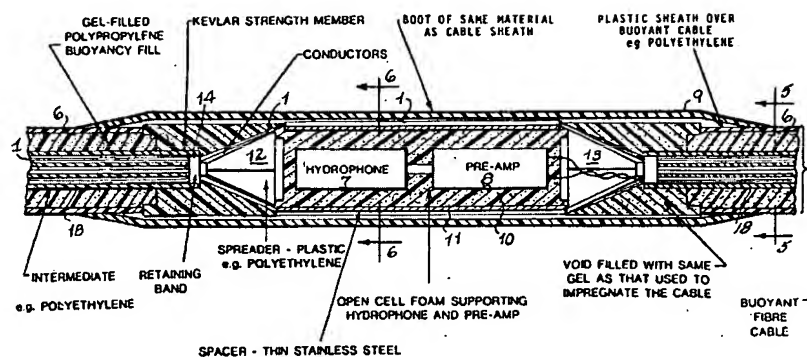


FIG. 3

Thus, Carpenter expressly teaches the very approach from which Bevan teaches away.

As a consequence, the evidence of record—i.e., the disclosures of the Office's two primary references—establishes that they are not combinable. *In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Gordon*, 221 U.S.P.Q. (BNA) 1125, 1127 (Fed. Cir. 1984); M.P.E.P. §2145 X D 2. Motivation to combine the teachings of two or more references cannot be supplied through abstraction but must be grounded in practical considerations flowing from

"positive, concrete evidence of record which justifies a combination of primary and secondary references." *In re Regal*, 188 U.S.P.Q. (BNA) 136, 139 (C.C.P.A. 1975) (n. 6).

The justification for the combination put forth by the Office is mere argument that does not equate to the production of evidence. Thus, the *evidence* of record establishes that Bevan and Carpenter are not properly combinable. Accordingly, any rejection predicated on the combination of Bevan and Carpenter is improvident and should be withdrawn.

**C. CLAIMS 6 AND 18-19 ARE UNOBVIOUS OVER
OLDERVALL AND EITHER BEVAN OR CARPENTER**

There are two obviousness rejections predicated on combinations of art including Oldervall:

- claim 6 as obvious under 35 U.S.C. §103(a) over Oldervall and Bevan in combination; and
- claims 18-19 as obvious under 35 U.S.C. §103(a) over Oldervall and Carpenter in combination.

But both Bevan and Carpenter teach the incorporation of strengthening structures into the cable itself, which Oldervall teaches away from. Thus, Oldervall cannot properly be combined with either Bevan or Carpenter.

Both Bevan and Carpenter incorporate the strengthening structures into the seismic cable itself. As the Office points out, the stranded metal jacket 20 for the optical fiber 18 of Bevan functions as a stress member—although it is not what one ordinarily skilled in the art would call a stress member—and the optical fiber is a part of the seismic cable. Carpenter, as is discussed above, teaches a plurality of actual stress members that form a framework for the seismic cable itself.

Oldervall teaches directly away from these types of approaches. For example, in one passage, Oldervall teaches in ¶[0005]:

The stress member is designed to provide the primary axial load carrying capability of the OBC. *The stress member is generally manufactured into the OBC construction such that it is integrated into the OBC* and the OBC is handled as a single unit when it is loaded onto a vessel and later deployed. *A problem with this approach is the size and weight of the integrated OBC and the*

size and complexity of the handling equipment required to deal with the cable.

(emphasis added) Subsequently, in ¶[0007]-¶[0008], Oldervall teaches:

A consequence of the traditional OBC construction is the cable's high mechanical rigidity. The high rigidity allows noise transmitted into one part of the OBC to migrate throughout the cable to receiver stations along the cable, reducing the system signal-to-noise ratio. In particular, stress members provide an ideal path for noise transmission. Traditional OBCs with receiver stations that are rigidly coupled to the cable provide little or no damping mechanism between the cable and the receiver station.

A desirable OBC includes receiver stations that are rigidly coupled to the cable during deployment, but become significantly decoupled prior to a survey such that signal-to-noise ratio is improved.

Note that neither Bevan nor Carpenter provide any ability to significantly decouple the sensors from the cable. Still later, in ¶[0022], Oldervall states:

Ocean bottom cables with internal stress members are traditionally expensive and complex in part because the connectors must terminate stress members and conductors. A benefit of an external stress member is that it may terminate at a point independent from an electrical conductor termination.

Thus, Oldervall clearly teaches away from internal stress members and in favor of external stress members.

As a consequence, the evidence of record—*i.e.*, the disclosures of the three references—establishes that Oldervall is not combinable with either Bevan or Carpenter. *In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Gordon*, 221 U.S.P.Q. (BNA) 1125, 1127 (Fed. Cir. 1984); M.P.E.P. §2145 X D 2. Motivation to combine the teachings of two or more references cannot be supplied through abstraction but must be grounded in practical considerations flowing from "positive, concrete evidence of record which justifies a combination of primary and secondary references." *In re Regal*, 188 U.S.P.Q. (BNA) 136, 139 (C.C.P.A. 1975) (n. 6). The Office's argument justifying the combination cannot overcome this evidence. The rejections are therefore improvident and Applicants request they be withdrawn.

D. OLDERVALL TEACHES AWAY FROM THE CLAIMED SUBJECT MATTER, AND THEREFORE ESTABLISHES ITS UNOBVIOUSNESS OVER THE ART OF RECORD

Each of the independent claims recites “a stress member extending continuously through the sensor module”—*i.e.*, an internal stress member. As noted above, Oldervall teaches that internal stress members are undesirable for a variety of reasons in at least ¶[0005], ¶[0007]-¶[0008], and ¶[0022]. It is by now well established that teaching away by the prior art constitutes *prima facie* evidence that the claimed subject matter is not obvious. *See, inter alia, In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987); *In re Hedges*, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986). Accordingly, the evidence of record establishes that the claims are not obvious. Applicants therefore request that all obviousness rejections be withdrawn.

III. CONCLUDING REMARKS

Applicants therefore respectfully submit that the claims are in condition for allowance, and requests that they be allowed to issue. The Examiner is invited to contact the undersigned attorney at (713) 934-4053 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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WILLIAMS, MORGAN & AMERSON
10333 Richmond Dr., Suite 1100
Houston, Texas 77042
(713) 934-7000

/Jeffrey A. Pyle/

Jeffrey A. Pyle
Reg. No. 34,904
Attorney for Applicants